APRIL/MAY 2025

23PEPH43A — SOLAR ENERGY UTILIZATION (Elective VI)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

Shanmuga Industries Arts & Science College T.V.Malai

1. What is conduction?
2. Define solar time.
3. What is the principle of heat flat plate collectors?
4. Give some general characteristics of solar collectors.
5. Define solar heating systems.
6. What are the types of solar water heaters?
7. What are the types of solar cells?
8. Define photovoltaics.
9. How is nanotechnology used in hydrogen storage?
10. How can the nanomaterials act as catalysts?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) How are the solar radiations on the Earth's surface?

Or

(b) Determine the solar time of Earth.

12. (a) How thermal performance of solar collectors being evaluated?

Or

(b) Explain about the focusing collector system.

13. (a) Explain in detail about the solar tanks.

Or

(b) Illustrate the Solar cooling systems.

14. (a) Define the process of silicon solar cells.

Or

(b) Demonstrate the electric conversion process with a neat diagram.

15. (a) Outline the high and low temperature fuel cells.

Or

(b) Explain how the nanotechnology is used in hydrogen storage.

Shanmuga Industries Arts & Science College T.V.Malai

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Classify the types of heat transfer with the help of a neat diagram.

17. Describe in detail the solar collectors with its physical principles.

18. Compare solar ponds and solar tanks in detail.

19. Illustrate the solar energy conversion and explain its types.

20. How the nanomaterial and nanotechnology are used in energy storage and production?

———————